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09/942,724	08/31/2001	Tetsuya Ohshima	NITT.0032	8408

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EXAMINER
NGUYEN, MICHELLE P

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/942,724	OHSHIMA ET AL.	
	Examiner	Art Unit	
	Michelle Nguyen	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 23-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 23-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 1, 3-5, 8, 9, 12 and 14-16 are objected to for the following reasons:

(a) In claim 1, lines 4, 6, 7 and 9, "flex" should be --flux--.

(b) Claim 3 recites the limitation "the focus point f" in line 2. There is insufficient antecedent basis for this limitation in the claim. Applicant may wish to delete the letter "f"; or applicant may wish to change "a focus point" to --a focus point f-- in claim 1, line 12.

(c) In claim 4, lines 3-5, "flex" should be --flux--.

(d) In claim 5, lines 3-5, "flex" should be --flux--.

(e) In claim 8, lines 3-5, "flex" should be --flux--.

(f) In claim 9, lines 3-5, "flex" should be --flux--.

(g) In claim 12, lines 4-6, 8 and 10, "flex" should be --flux--.

(h) Claim 13 recites the limitation "the focus point f" in line 2. There is insufficient antecedent basis for this limitation in the claim. Applicant may wish to delete the letter "f"; or applicant may wish to change "a focus point" to --a focus point f-- in claim 12, lines 13-14.

(i) In claim 14, lines 4-6, "flex" should be --flux--.

(j) In claim 15, lines 4-6, "flex" should be --flux--.

(k) In claim 16, lines 4-6, "flex" should be --flux--.

Appropriate correction is required.

Claim Rej ctions - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3, 6, 7, 10-13, 17-21 and 23-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation "said projected image is a duplicate of luminous input flux with a higher and more uniform luminance" in lines 10-11. Applicant's disclosure and drawings do not teach means for providing a projected image having a higher luminance than the input flux. Further, it is not understood how an output flux can be greater than the corresponding input flux.

Claims 2, 3, 6, 7, 10, 11, 18-21 and 23-25 include all limitations set forth in claim 1.

Claim 12 is rejected for the same reasons in connection with claim 1 as discussed above (see lines 11-12).

Claims 13, 17 and 26-28 include all limitations set forth in claim 12.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-21 and 23-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said projected image is a duplicate of luminous input flux with a higher and more uniform luminance" in lines 10-11. The term "duplicate" suggests that the projected image and the input flux are identical. However, the phrase "higher and more uniform luminance" suggests that the projected image is not identical to the input flux. Claim 1 is therefore considered vague and indefinite because it is not understood whether or not the projected image and the input flux are identical.

Further, claim 1 recites the limitation "roughly at a focus point" in line 12. The term "roughly" is not clearly defined, and therefore renders the claim vague and indefinite.

Claims 2, 3, 6, 7, 10, 11, 18-21 and 23-25 include all limitations set forth in claim 1.

Further, claim 2 recites the limitation "roughly at the opposite focus point" in lines 1-2. The term "roughly" is not clearly defined, and therefore renders the claim vague and indefinite.

Claims 4, 5, 8 and 9 each recites the limitation "roughly at a focus point" in line 9. The term "roughly" is not clearly defined, and therefore renders the claims vague and indefinite.

Claim 12 is rejected for the same reasons in connection with claim 1 as discussed above (see lines 11-14).

Claims 13, 17 and 26-28 include all limitations set forth in claim 12.

Claims 14-16 each recites the limitation "roughly at a focus point" in lines 9-10. The term "roughly" is not clearly defined, and therefore renders the claims vague and indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,286,961 to Ogawa.

With regard to claim 1, Ogawa discloses a display (projection display apparatus 900) comprising (see Col. 21, lines 5-7, Fig. 14; As to the projection display apparatus of Fig. 14, examiner has chosen to refer to such apparatus which uses the illumination system of Fig. 8.):

a projector including a light source array (light source 320, first lens array 330) extending at least one-dimensionally or two-dimensionally for providing an input image composed by a luminous input flux emitted therefrom (see Col. 10, lines 24-33, Col. 16, lines 55-63, Fig. 8; First lens array 330 divides a ray of light emitted from the

light source 320 into a plurality of partial light fluxes, which constitutes an input flux comprising an array of light rays.),

an illumination lens (superimposing lens 350) through which the luminous input flux emitted from the light source array passes (see Fig. 8),

a light valve (illumination area 80) formed and positioned relative to the illumination lens and the light source array to pass the luminous input flux passed through the illumination lens therein (see Col. 10, lines 55-9, Fig. 8),

and a projection lens (projection lens system 970) for projecting the luminous input flux modulated at the light valve (see Fig. 14); and

a screen (projection screen 980) for displaying a projected image composed by the luminous input flux projected by the projection lens of the projector, said projected image is a duplicate of the luminous input flux having high and uniform luminance (see Col. 1, lines 10-3, Fig. 14),

wherein the light valve of the projector is located roughly at a focus point of the illumination lens (see Fig. 8).

With regard to claim 2, Ogawa teaches the light source array (light source 320, first lens array 330) to be located roughly at the opposite focus point of the illumination lens from the focus point on which the light valve is located (see Fig. 8).

With regard to claim 3, Ogawa teaches the light valve to be positioned between the illumination lens and the focus point f of the illumination lens with a deviation in the range of ±25 % away from the focus point (see Fig. 8).

With regard to claim 25, Ogawa teaches the light valve as discussed above with respect to claim 1 to be shaped in rectangle.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 6, 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa as applied to claims 1 and 2 above, respectively, and further in view of U.S. Patent No. 6,330,111 to Myers.

With regard to claims 6 and 10, Ogawa does not teach the light source array as discussed above with respect to claims 1 and 2, respectively, to comprise light-emitting diodes arranged in a one-dimensional or two-dimensional array. However, Myers teaches light-emitting diode arrays to have low power consumption relative to conventional lighting elements, the ability to emit light of different colors and durability (see Col. 1, lines 35-8). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source array of Ogawa with a light-emitting diode array as taught by as taught by Myers for reducing overall power consumption of the display.

With regard to claim 18, Myers teaches the light-emitting diodes constituting a light source array as discussed above with respect to claim 10 to be arranged at least in two or more different directions in combination (see Fig. 2A).

10. Claims 7, 11, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa as applied to claims 1, 2, 10 and 18 above, respectively, and further in view of U.S. Patent No. 6,323,999 to Ueda et al.

With regard to claims 7, 11, 19 and 20, Ogawa does not teach the screen as discussed above with respect to claims 1, 2, 10 and 18, respectively, to be formed to diffuse reflection thereon. However, Ueda et al. teach a diffusing plate (16) to be in contact with a reflecting surface of a screen (13) for further magnifying the image (see Col. 9, lines 12-3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the screen of Ogawa with the screen of Ueda et al. for further magnifying the projected image.

11. Claims 12, 13, 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,286,961 to Ogawa in view of U.S. Patent No. 6,323,999 to Ueda et al.

With regard to claims 12, 13 and 28, Ogawa does not disclose a stereoscopic display comprising a pair of projectors. Instead, Ogawa discloses a display comprising a projector including the limitations set forth in claim 12 for each of the projectors claimed (see discussion above with respect to claims 1, 3 and 25, respectively). However, Ueda et al. disclose a stereoscopic display comprising a pair of projectors for enhancing the feeling of presence (see Col. 1, lines 9-18). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to convert the display of Ogawa to a stereoscopic display as taught by Ueda et al. for enhancing the feeling of presence.

With regard to claim 17, Ogawa does not teach the screen as discussed above with respect to claim 12 to be formed to diffuse reflection thereon. However, Ueda et al. teach a diffusing plate (16) to be in contact with a reflecting surface of a screen (13) for further magnifying the image (see Col. 9, lines 12-3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the screen of Ogawa with the screen of Ueda et al. for further magnifying the projected image.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of Ueda et al. as applied to claim 20 above, and further in view of U.S. Patent No. 4,329,019 to Okoshi et al.

With regard to claim 21, Ueda et al. teach the screen as discussed above with respect to claim 20 to comprise an anisotropic diffusion means (see Col. 9, lines 18-23, Fig. 5). Although Ueda et al. further teach the screen to be retroreflective, Ueda et al. do not teach explicitly the screen to comprise a corner reflector for causing the retroreflectivity of the screen. However, Okoshi et al. disclose a display comprising a retroreflective screen for causing diffuse reflection of and performing display of the projected image, thereby rendering the screen the display of Okoshi et al. analogous to the screen of Ueda et al. (see Col. 3, lines 29-31). Okoshi et al. teach the screen to comprise a corner reflector for improving reflection selectivity (see Col. 2, lines 11-8, Col. 3, lines 20-52). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the screen of Ueda et al. with the screen Okoshi et al. for improving reflection selectivity.

13. Claims 23, 24, 26 and 27 are rejected under 35 U.S.C. 103 (a) as being upatentable over Ogawa.

Ogawa et al. do not teach explicitly a width of the light valve as discussed above with respect to claim 1 to be formed according to a focal length from the illumination lens to the light valve, and an angle of radiation at each point of the light source array measured in parallel with a direction of the width of the light valve, or a diameter of the light source array to be formed according to a focal length from the illumination lens to the light valve, and an F-number of the projection lens. However, it would have obvious to one having ordinary skill in the art to provide a light valve and a light source array as such for improving efficient use of light, and, in turn, maximizing display performance.

Allowable Subject Matter

14. Claims 4, 5, 8, 9 and 14-16 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

With regard to claims 4 and 14, the prior art does not teach in combination with all other elements recited in the respective claims a display in the case where an area of a light source is large, and satisfying the expression $W > 1.2f / Fn$, where W is the diameter of a light source, f is the focal length of an illumination lens and Fn is the F-number of a projection lens as set forth in the claims.

With regard to claims 5 and 15, the prior art does not teach in combination with all other elements recited in the respective claims a display in the case where an area of a light source is small, and satisfying the expression $W \leq 1.2f / Fn$, where W is the

diameter of a light source, f is the focal length of an illumination lens and Fn is the F-number of a projection lens as set forth in the claims.

With regard to claim 8, the prior art does not teach in combination with all other elements recited in the claim a display in the case where the expression $\alpha H \geq \arctan (dH / 2f)$ is satisfied, where dH is the horizontal width of a light valve, f is the focal length of an illumination lens and αH is the angle of radiation in the horizontal direction at each point of a light source as set forth in the claim.

With regard to claims 9 and 16, the prior art does not teach in combination with all other elements recited in the respective claims a display, wherein the expression $\alpha V \geq \arctan (dV / 2f)$ is satisfied, where dV is the vertical width of a light valve, f is the focal length of an illumination lens and αV is the angle of radiation in the vertical direction at each point of a light source as set forth in the claims.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

mpn
May 1, 2003

RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
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